REMARKS

Claims 32-51 are pending in the present application. In the Office Action mailed September 17, 2004, the Examiner rejected claims 32-34, 37-41, 43-44, and 47-50 under 35 U.S.C. §102(e) as being anticipated by Sodickson (USP 6,717,406).

Applicant appreciates the indication that claims 35, 36, 42, 45, 46, and 51 are allowable.

The Examiner rejected claim 32 under 35 U.S.C. §102(e) as being anticipated by Sodickson. Under 35 U.S.C. §102(e), a person shall be entitled to a patent unless the invention was described in an application for patent by another filed in the United States before the invention by the applicant for patent. The Examiner stated that "Sodickson discloses a method of automatically selecting MR data for image reconstruction . . . ." Office Action, pp. 2-3. Specifically, the Examiner indicated that the method steps of claim 32 are disclosed in the description of a first embodiment (col. 8, lns. 3-19), figures 14a and 14b, and in the description of a second and third embodiment (col. 8, lns. 20-42). Applicant respectfully disagrees. Sodickson does not describe "the invention" as set forth in claim 32. That is, Sodickson does not describe a method of automatically selecting MR data for image reconstruction as set forth in claim 32.

The Examiner indicated that figures 14a and 14b disclose comparing the sensitivities of the plurality of images. Office Action, p. 3. Sodickson teaches that figures 14a and 14b "compare image domain subencoding reconstructions of a five-fold accelerated cardiac MR image using an in vivo sensitivity reference with and without numerical conditioning." Col. 23, lns. 6-9. That is, figures 14a and 14b show examples of two types of image domain subencoding reconstructions. Figure 14a shows image domain subencoding reconstruction without numerical conditioning, and figure 14b shows image domain subencoding reconstruction with numerical conditioning. See col. 23, lns. 6-21. The conditioned reconstruction, figure 14b, shows a noise and artifact level "clearly lower than the noise and artifact level in the unconditioned reconstruction." Col. 23, lns. 16-19. Sodickson does not teach or suggest comparing measurable sensitivities to a desired FOV of figures 14a and 14b as called for in claim 32. Rather, figures 14a and 14b are examples of two types of image domain subencoding reconstructions. Sodickson fails to teach or suggest comparing measurable sensitivities to a desired FOV of any images reconstructed from MR data.

Furthermore, claim 32 calls for combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image. Sodickson not only fails to teach or suggest comparing measurable sensitivities to a desired FOV of any images reconstructed from the acquired MR data as stated above, Sodickson also fails to teach or suggest

combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image. The Examiner indicated that Sodickson discloses combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image in column 8, lines 20-42. Office Action, p. 3. However, Applicant respectfully disagrees.

Sodickson teaches that an MR image is formed "from an array of receiving coils having unique spatial sensitivities by obtaining a reference image set, conditioning the reference image set, measuring RF signals indicative of nuclear spins simultaneously in each of the plurality of RF receiving coils, performing a Fourier transform on the signals from each coil to form aliased component coil image data signals, unaliasing the image data signals using the reference image set to form reconstructed component coil images, and combining the reconstructed component coil images." Col. 8, lns. 20-29. Sodickson further teaches that an MR image is formed "from an array of receiving coils having unique spatial sensitivities by measuring MR signals indicative of nuclear spins in the plurality of receiver coils to form a set of MR signals, generating a set of encoding functions representative of a combination of spatial distributions of receiver coil sensitivities with spatial modulations corresponding to the gradient encoding steps, transforming the set of encoding functions to generate a new set of functions representative of distinct spatial positions in an image, and applying the new set of functions to the set of MR signals to form the magnetic resonance image." Col. 8, lns. 30-42. Although Sodickson teaches forming an MR image from an array of receiving coils, neither of these embodiments in column 8, lines 20-42 teach or suggest combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image. That is, the reference teaches an image reconstruction technique wherein data from several coils together with coil sensitivity profiles are used to reconstruct a single composite image. In contrast, the present invention claims a method of extracting an image from inclusion in a composite image based on a sensitivity of the image compared to a threshold. Furthermore, Sodickson fails to teach or suggest combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image in any other embodiment or location.

As stated above, the Examiner indicated that figures 14a and 14b disclose comparing the sensitivities of the plurality of images and that Sodickson discloses combining those of the plurality of images having a sensitivity to the desired FOV that exceeds a threshold to form a composite image in column 8, lines 20-42. Sodickson does not disclose the invention because there is no teaching therein of combining images having a sensitivity to a desired FOV that

exceeds a threshold to form a composite image. As stated above, figures 14a and 14b are already in composite form, and Sodickson does not teach further combining figures 14a and 14b or the desirability of doing so. Figures 14a and 14b are intended as examples to allow the patent reader to compare image domain subencoding reconstructions with and without numerical conditioning.

For at least the reasons above, claim 32 and the claims that depend therefrom are deemed patentable over the prior art.

The Examiner rejected claim 39 under 35 U.S.C. §102(e) as being anticipated by Sodickson. The Examiner indicated that figure 11b discloses the step of determining an intensity value for each MR image and that figure 1, display 18a, discloses displaying an intensity map of the intensity values of the MR images. Office Action, pp. 2-3. Sodickson teaches that "FIGS. 11a-11e show an example of a high-resolution cardiac SMASH image reconstructed using a rapid low-resolution in vivo sensitivity reference." Col. 17, lns. 3-5. Figure 11a shows "low-resolution in vivo sensitivity maps of coils 1-6 in a double-oblique plane." Col. 17, lns. 9-11. Sodickson teaches that figure 11b "illustrates real (solid) and imaginary (dashed) components of coil intensity profiles along the dotted lines in FIG. 11a." Col. 17, lns. 11-13. Determining the coil intensity profiles of the maps of figure 11a is not tantamount to the step of determining an intensity value for each MR image as called for in claim 39. An intensity value for each map is not determined in figure 11b. Rather, real and imaginary components of coil intensity profiles are determined along the dotted lines in FIG. 11a.

Sodickson teaches a display 18a for displaying a digitized visual image calculated by MRI image processor 18. Col. 1, lns. 34-43. Claim 39 calls for displaying an intensity map of the intensity values of the MR images. There is no teaching or suggestion in Sodickson for displaying a map of intensity values of the MR images on display 18a. Sodickson does not teach either displaying a map of intensity values of the MR images or the coil intensity profiles determined in figure 11b on display 18a. Further, claim 39 calls for allowing an operator to select images from the map for inclusion into a composite image of the image FOV. Not only is there no teaching of displaying a map of intensity values on display 18a in Sodickson, but Sodickson also fails to teach or suggest allowing an operator to select images for inclusion into a composite image of the image FOV, and the Examiner has not identified any such teaching in Sodickson.

For at least the reasons above, claim 39 and the claims that depend therefrom are deemed patentable over the prior art.

The Examiner stated that claims 43-44 and 47-50 are "similarly analyzed and rejected" as the previous claims. Office Action, p. 5. Accordingly, Applicant incorporates the remarks set forth above.

Additionally, claim 48 calls for, in part, the step of determining an intensity value for each image. As stated above, figure 11b "illustrates real (solid) and imaginary (dashed) components of coil intensity profiles along the dotted lines in FIG. 11a." Col. 17, lns. 11-13. Determining the coil intensity profiles of the maps of figure 11a does not anticipate the step of determining an intensity value for each image as called for in claim 48. That is, a coil intensity profile as shown in figure 11b is not taught to represent an intensity value for the image.

Claim 48 also calls for, in part, the steps of mapping the intensity values and visually display the map to an operator and prompting the operator to confirm, for inclusion in the composite image, the automatically selected images. As stated above, Sodickson teaches a display 18a for displaying a digitized visual image calculated by MRI image processor 18. Col. 1, lns. 34-43. There is no teaching or suggestion in Sodickson for mapping the intensity values and visually displaying the map to an operator. There is also no teaching or suggestion in Sodickson for prompting the operator to confirm, for inclusion in the composite image, any automatically selected images.

For at least the reasons above, claim 48 and the claims that depend therefrom are deemed patentable over the prior art.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 32-51.

Applicant again appreciates the indication of allowability for claims 35, 36, 42, 45, 46, and 51.

Applicant appreciates the Examiner's consideration of these remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

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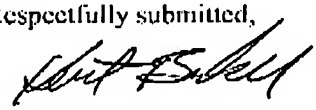
Respectfully submitted,



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